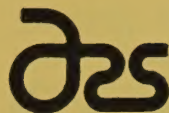


Notes

From the Director



Agricultural
Research
Service

United States
Department of
Agriculture

Beltsville, Maryland

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January 1987

Diener to Receive Prestigious International Award

Theodor O. Diener, Microbiology and Plant Pathology Laboratory, PPI, has been selected to receive the 1987 Wolf Prize in Agriculture. His selection for this prestigious international award was made in Israel and carries with it a prize of \$100,000.

Dr. Diener is the celebrated discoverer of viroids, the smallest known agents of infectious disease that consist of short strands of RNA. Diener and his colleagues have sequenced the potato spindle tuber viroid and identified the nucleotide sequences that are responsible for pathogenicity. They developed nucleic acid hybridization techniques that are used commercially for diagnosing viroid infections in the field. Viroids are widely implicated in plant diseases worldwide, and continuing research at laboratories in the U.S. and abroad is giving increased attention to viroids as agents of disease in both plants and animals.

Dr. Diener, a member of the National Academy of Sciences, is being recognized for his discovery of viroids and his research contributions for the benefit of mankind. The Prize will be awarded in Israel at a special ceremony of the Knesset in Jerusalem.

Kinney Wins Presidential Award

Terry B. Kinney, Jr., ARS Administrator, received from President Reagan in December the Presidential Rank Award, the highest honor recognizing excellence in leadership for senior executives in the Federal Government. Dr. Kinney, 1 of 44 executives honored throughout the Federal Government, was the only honoree selected from the U.S. Department of Agriculture for this award.

A native of Massachusetts, Dr. Kinney joined ARS in 1962. He became the Administrator of ARS in 1980. President Reagan cited Dr. Kinney for his strong and effective national leadership of the agricultural research programs of the Nation. Since becoming the ARS Administrator, Dr. Kinney has taken effective actions to reduce administrative overhead and to focus research on the most pressing national priorities, including soil and water conservation, product quality and new uses of surplus commodities to expand domestic and international markets.

Knutson to Lead Entomologists

Lloyd Knutson, Director, Biosystematics and Beneficial Insects Institute (BBII), has been elected President of the Entomological Society of America (ESA) for 1988. With 7,300 U.S. and 950 foreign members, ESA is the largest and most influential entomological society in the world. The society represents all scientific aspects of entomology, publishes five journal series, and with the associated American Registry of Professional Entomologists (for which Knutson served as President in 1985-86), it also represents professional/consultant aspects. Three other ARS insect systematists have served as President of the ESA since it merged with the American Association of Economic Entomologists in 1953; P. W. Oman (1959), C. W. Sabrosky (1969), and R. I. Sailer (1977). All three were currently or previously research entomologists in the Systematic Entomology Laboratory.

Twelfth Annual Symposium in Agricultural Research

Theron S. Rumsey and George L. Steffens, Co-chairs of Beltsville's Symposium XII, are moving ahead with plans for the program scheduled for May 3-7, 1987. The theme this year is "Biomechanisms Regulating Growth and Development." Thirty-one outstanding speakers have been invited to discuss the most recent developments in the fields of biochemistry and physiology as they relate to the growth and development of animals, plants, and insects.

A special program is scheduled for the evening of May 6. Terry B. Kinney, Jr., Administrator of ARS, will announce the most recent selections chosen to enter the ARS Scientific Hall of Fame. E. F. Knipling, an ARS pioneer in entomology, was the honoree last year. The Hall of Fame Ceremony this year will include a dinner and reception at Martin's Crosswinds in Greenbelt. Please plan to join your colleagues to make this a successful and memorable occasion.

Behavioral Expert Joins Insect Chemical Ecology Laboratory

Ashok K. Raina was recently hired by ARS as a Research Entomologist in the Insect Chemical Ecology Laboratory, AEQI. Dr. Raina will investigate the mechanisms that control the production and release of behavior modifying chemicals such as pheromones in insects.

Dr. Raina received his Ph.D. in 1974 from North Dakota State University. His research thesis on ecophysiological and genetic aspects of diapause in the pink bollworm was conducted at the ARS Metabolism and Radiation Research Laboratory. His entomological career started in 1962 with the Commonwealth Institute of Biological Control in India. Since 1981, Dr. Raina has worked as a Senior Research Associate with the Department of Entomology, University of Maryland.

During this period he discovered the hormonal control of sex pheromone production in corn earworm. His major interests are behavioral physiology and insect-plant interactions.

Diversity in the Workforce

Erich Bloch, Director of the National Science Foundation, wrote in a recent report that women and members of minority groups have historically had low rates of participation in science and engineering. This is an especially serious concern for research organizations where a large percentage of appointments are made at the postdoctoral level and the number of minority candidates with doctoral degrees is small.

As an indication of the availability of women and minorities with doctorates, the NSF published data gathered in recent years. During 1983, for example, the total number of blacks in the U.S. holding science and engineering (S/E) postdoctorates was 215. There were 1,175 Asians and 11 Native Americans holding similar appointments. Almost 3,100 women held S/E postdoctoral appointments, up from 900 in 1973. The percentages of all postdoctorates in the U.S. were 2 percent, 11 percent, 0.1 percent, and 28 percent, respectively, for each group.

Hispanics were employed in 270 postdoctoral positions in 1983, accounting for 2.5 percent of the S/E postdoctorates.

Recently, Dr. Kinney, Administrator of ARS, announced a special "Outreach Initiative" in the ARS Postdoctoral Research Associate Program designed to focus attention on correcting underrepresentation in the scientist workforce.

The Agency, including the Beltsville Area, will make a special effort to attract Blacks, native American Indians, and Hispanic candidates into these positions. Because of the limited numbers available and the competition for these candidates from other employers, we need the assistance of every employee in ARS to help us locate candidates and interest them in our programs.

As you attend professional society meetings, visit with colleagues in the academic and scientific community, or meet with visitors, please be alert for opportunities to recruit or develop the interest of these underrepresented minority groups in our programs at Beltsville and indeed throughout ARS.

Plant Pathogenic Viroids may be Plant Genes That Have Escaped and Run Wild

Viroids are the cause of many plant diseases and have been suspected of causing some animal diseases. Viroids are composed of only a single strand of RNA and can replicate only within living cells. Ahmed Hadidi, Research Microbiologist, Microbiology and Plant

Pathology Laboratory, PPI, has been examining the genetic content of viroids and comparing their nucleotide sequences. He has found significant similarities between the central region common to many viroids and regions of normal cell DNA called group 1 introns. Group 1 introns are unique in that they can cut themselves out from a cell's DNA before it begins to function. This discovery implies that viroids have originated from introns, i.e., they are escaped introns, or conversely, introns and viroids may have originated from a common ancestor. These speculations can only be settled by more gene comparisons which may lead to a better understanding of the origin of pathogenic organisms such as viroids.

Dr. Hadidi's research findings were recently published in Plant Molecular Biology and cited in the October 24th issue of Science.

Metabolism of Sterols by Nematodes

Plant-parasitic nematodes are roundworms that cause many serious crop diseases. They cost American agriculture an estimated \$7 billion annually in lost efficiency. The root-knot nematodes are the most economically important group of these parasites.

Sterols are important chemical compounds that nematodes require to grow and reproduce. Scientists in the Insect and Nematode Hormone Laboratory, PPI, have known for some time that several compounds that interfere with the conversion of plant sterols to nematode sterols are nematotoxic. In more recent studies, David Chitwood and his coworkers investigated the metabolism of plant sterols by three races of root-knot nematodes by determining the sterol composition of their eggs. The major sterols of the nematode eggs differed from plant sterols in that the nematode sterols did not contain double bonds, i.e., either the nematode females or the young, embryonic eggs introduce hydrogen atoms into the plant sterols. Any compound that interferes with this hydrogenation could disrupt the nematode life cycle and form the basis for further development of other compounds that are nematocidal because they inhibit nematode sterol metabolism. In addition, because insect molting hormones (or ecdysteroids) occur in very high concentrations in eggs of several insect species, they examined nematode eggs for the presence of ecdysteroids. However, none were detected.

These studies are designed to find new principles and methods for controlling these destructive pests through the disruption of their physiological systems.

Infiltration of
Soil Water Under
Minimum Tillage

Agriculture is the Nation's largest consumer of water. Four times more water is consumed to produce food and fiber than for all other purposes combined. Protecting our water resources and using them efficiently is an important national priority. The Joint Council on Food and Agricultural Sciences has pointed out that we need to increase our understanding of relationships between crop production systems and the quality of ground and surface waters.

Scientists in the Soil Nitrogen and Environmental Chemistry Laboratory, AEQI, have been conducting long-term field studies on the effects of tillage management practices on nitrogen and water use efficiency during crop production. It is well known, for example, that the rate of infiltration of water into the soil has a direct effect on surface runoff, soil erosion, soil water storage, and the leaching of plant nutrients and pesticides. James Starr and his collaborators have used double ring infiltration techniques to study the effects of tillage (conventional and minimum-till corn) and the presence or absence of corn plants on ponded infiltration rates into the soil. A 50 to 100 percent greater infiltration capacity for minimum-till over conventional-till was observed during the summer months. The most striking result of this research, however, was an abrupt two-fold increase in infiltration capacity for conventional-till in the late fall. These results have a direct bearing on the potential leaching of agrochemicals from crop land, and especially may result in unexpectedly deep movement of these chemicals between crop seasons under conventional-till cropping.

Popular Handbook
on Storage of
Perishables
Updated

Substantial losses are suffered annually in marketing channels as a result of the deterioration in product quality during storage. To assist producers, wholesalers, retailers, and consumers in reducing these losses, ARS published USDA Agriculture Handbook 66 (AH 66) titled "The Commercial Storage of Fruits, Vegetables, and Florist and Nursery Stocks."

Under the leadership of Alley Watada, Research Leader, Horticultural Crops Quality Laboratory, HSI, and Robert E. Hardenburg, ARS (retired), AH 66 has been newly revised and reissued with the most recent recommendations on optimum conditions for maintaining product quality in storage.

AH 66 is a USDA publication which is in great demand. This is evidenced particularly by the number of initial orders, which included the University of California (2,000 copies), Cornell University (800 copies), North

Carolina State University (500 copies), Agricultural Marketing Service, and Office of International Cooperation and Development. In addition, the Government Printing Office, which only maintains a supply of selected publications, has indicated that they will have an additional 2,000 copies for sale. An international organization has requested permission to also publish this handbook in Spanish.

Role of Fatty Acids in the Diet

Heart disease is the leading cause of death in the United States. The relationship between dietary patterns and the development of heart disease, therefore, is highly important to the American public. Consumption of polyunsaturated fats (PUFA) is often advised for preventing atherosclerosis; however, there still are questions concerning recommended amounts. Also, there are uncertainties as to why dietary PUFA should be effective.

Scientists in the Lipid Nutrition Laboratory, BHNRC, are conducting controlled diet studies with healthy male volunteers to better understand the role of essential fatty acids in the diet. Elliott Berlin and coworkers in the BHNRC have determined that dietary linoleic acid altered the fatty acid composition of a lipid fraction of the low density lipoproteins (LDL) isolated from the blood plasma of the volunteers. Their results showed that the molecule became more fluid as a result of the PUFA diet. The LDL molecule is usually associated with transporting cholesterol in the circulatory system and with depositing cholesterol in developing atherosclerotic plaques. These findings help to explain how the more fluid LDL can interact with receptors of other cells for the safe disposal of cholesterol. The development of a clear understanding of biochemical mechanisms associated with the functions of essential fatty acids will hopefully lead to optimum diet recommendations.

Nutritional Information Welcomed by Food Retailers

Based on research information provided by ARS scientists at Beltsville, the meat industry has launched an aggressive program to provide to the public clear and concise nutritional information on meat. The Meat Nutri-Facts program is supported by the National Livestock and Meat Board and consists of colorful handouts with nutritional data that the consumer can readily understand.

Katsuto Ono, Meat Science Research Laboratory, ASI, collaborated with scientists in the Nutrient Composition Laboratory, BHNRC, to develop extensive data on the nutrient composition of beef, pork, lamb, veal, ham, bacon, and ground beef. This information was originally

published in USDA Handbook 10-13, Composition of Foods, and then made available by the meat industry in a more consumer-oriented format as Meat Nutri-Facts. Over 38 of the 50 largest retail food chains in the nation have put Nutri-Facts into their merchandizing program. The program has won the "President's Circle Nutrition Education Award" of the American Dietetic Association.

Human Nutrition
Research Director
Recognized

Walter Mertz, Director of the Beltsville Human Nutrition Research Center (BHNRC), was commended by Secretary of Agriculture, Richard E. Lyng, in December for outstanding performance as leader of the human nutrition research programs at Beltsville. Secretary Lyng presented Dr. Mertz with a special award and expressed appreciation for the work Mertz has done to make the USDA a leader in the Federal Service.

Dr. Mertz has provided exceptional leadership in directing research to examine the linkage of diet to good health. Mertz has fostered research on the role of chromium in carbohydrate metabolism. He has helped to make Beltsville a unique location in joining together human nutrition research with animal nutrition research. BHNRC and the Animal Science Institute are jointly developing a series of animal models for nutritionally modifiable problems affecting both humans and farm animals. For example, swine have been used as models in the study of the effects of copper deficiency and high fructose diets on heart disease. Dr. Mertz is internationally recognized for his wide contributions to human nutrition research.

Arboretum
Scientists
Cited

Theodore R. Dudley and Eugene Eisenbeiss, U. S. National Arboretum, received the C. R. Wolf Award from the Holly Society of America. This major award of the Society is given to individuals who have done outstanding work on hollies. Dr. Dudley was recognized for his vast contributions to research on the taxonomy of the genus Ilex and his extensive plant explorations to introduce new species into the U.S. Mr. Eisenbeiss has served for many years as International Registrar for cultivated Ilex and has published numerous scientific articles dealing with holly, thus promoting the aims of the Society. The C. R. Wolf Award is named for the founder of the Holly Society of America.

Three
Fellowships
Awarded

Terry B. Kinney, Jr., Administrator of ARS, has awarded three ARS Fellowships to scientists at Beltsville to assist them in upgrading their research skills in areas important to the mission of ARS.

James D. Anderson, Research Leader, Plant Hormone Laboratory, PPHI, received a Fellowship to spend a year

at the Weizmann Institute of Science in Israel. Dr. Anderson is well known for his research on ethylene biosynthesis and will use this opportunity to collaborate with colleagues in Israel who are among the world authorities in this field.

James Svoboda, Research Leader, Insect and Nematode Hormone Laboratory, PPI, will spend 4 months in the laboratory of Huw H. Rees, Biochemistry Department of the University of Liverpool, United Kingdom. Dr. Svoboda is especially interested in steroid chemistry as it relates to the physiological development of insects.

Robert D. Lumsden, Research Plant Pathologist, Soilborne Diseases Laboratory, PPI, received the third Fellowship. He will use this funding to spend 6 months studying new techniques at the Glasshouse Crops Research Institute, Littlehampton, West Sussex, England.

Visiting Scientists

Asafu N. Maradufu from Tanzania is visiting the Insect Chemical Ecology Laboratory, AEQI, to conduct research on the isolation and structural elucidation of pesticidal compounds of plant origin. These phytochemicals show promise as antifeedants, repellents, and attractants and are lethal to ticks and other insects.

Dr. Maradufu is a Fulbright Scholar through the cooperation of the Council for International Exchange of Scholars. He received his Ph.D. in 1973 from McGill University in Canada and has served as a Research Scientist at the International Centre for Insect Physiology and Ecology in Nairobi and Lecturer at the University of Nairobi. Dr. Maradufu is presently the Chief Research Officer of the Tropical Pesticides Research Institute in Arusha.

Young Tae Lee is a visiting scientist in the Plant Molecular Genetics Laboratory, PGGI. Dr. Lee is sponsored by the Rural Development Administration, Suweon, Republic of Korea. Dr. Lee is a rice geneticist/breeder and is working with Gideon Schaeffer on the biochemical characterization of rice mutants recovered from tissue and anther culture. His project will include the isolation of mitochondrial DNA and southern blot hybridizations with DNA probes. The research is designed to find genetic alterations in tissue culture-derived lines and establish relationships to in vitro-induced infertility. Dr. Lee brings valuable experience in rice breeding and has already done numerous crosses with our lysine variants.

Cash Awards

James M. Slye, Tractor Operator, Farm Management Branch, DO - Outstanding performance of assigned duties in the Grounds Section of the Farm Management Branch.

Helen A. Norman, Plant Physiologist, Weed Science Laboratory, AEQI - For sustained superior performance in the conception, planning, and implementation of novel experimental approaches resulting in key publications that answer critical questions in plant lipid biochemistry.

Robert L. Hoover, Tractor Operator, Farm Management Branch, DO - Outstanding performance of assigned duties in the Grounds Section of the Farm Management Branch.

Mary G. Harris, Secretary, Beltsville Human Nutrition Research Center - For her outstanding efforts in training and introducing the new secretaries to the Beltsville Human Nutrition Research Center.

Ferd R. Bender, Jr., Electrician Leader, Maintenance & Construction Branch, DO - Outstanding work performance in the Electric & Line Maintenance Shop of the Maintenance & Construction Branch, Division of Operations.

Barbara Boswell, Biological Laboratory Technician, Helminthic Diseases Laboratory, API - For outstanding service in the support of the cattle parasites epidemiology and genetics project.

Vincent P. Flanagan, Physical Science Technician, Lipid Nutrition Laboratory, BHNRC - For continued excellence in performing regular duties and superior initiative which has made progress in research possible.

Mary P. Howard, Biological Laboratory Technician, Vitamin & Mineral Nutrition Laboratory, BHNRC - For the thorough planning of the nutrition study at the Holy Cross Abbey and professional conduct of the study which reflected favorably upon the USDA.

Quality Increase

Ann Ballentyne, Clerk-Typist, Lipid Nutrition Laboratory, BHNRC - For excellence in preparation of scientific manuscripts in support of the Lipid Nutrition Laboratory research program.

Catherine A. Guidry, Biological Laboratory Technician, Lipid Nutrition Laboratory, BHNRC - For the planning-coordination and distribution of samples from human studies in an exemplary manner, resulting in savings in time and effort of several investigators.

David A Knox, Entomologist, Beneficial Insects Laboratory, BBII - In recognition of outstanding work in maintaining and organizing the Bee Disease Diagnostic Service, conducting the National Bee Mite Survey, and for the support of the Beneficial Insects Laboratory research program.

Sandra M. Saufferer, Botanist, Germplasm Introduction & Evaluation Laboratory, PGGI - For an exceptionally high level of sustained performance as Botanist, Germplasm Introduction & Evaluation Laboratory.

Patricia Laster, Computer Technician, Model & Database Coordination Laboratory, ASRI - For outstanding efforts in establishing the ARS BIONET Research Resource.

Lawrence I. Colbert, Biological Laboratory Technician, Ruminant Nutrition Laboratory, ASI - In recognition of outstanding performance of duties in the research effort of the Ruminant Nutrition Laboratory.

Esther M. McGuire, Secretary, Lipid Nutrition Laboratory, BHNRC - For excellence in planning and implementing office procedures in support of the Lipid Nutrition Laboratory research program.

Donna K. Fogle, Biological Laboratory Technician, Milk Secretion & Mastitis Laboratory, ASI - For continuing excellence, diligence, and dedication in performance of assigned duties.

Sherry A. Cohen, Secretary, Insect & Nematode Hormone Laboratory, PPI - In recognition of sustained superior performance of assigned secretarial and administrative support duties and recent development of skills required to carry out additional computer-related tasks for the INHL and other PPI labs.

Epilogue

It is not the employer who pays wages - he only handles the money. It is the product that pays wages.

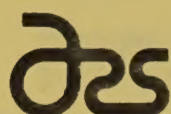
.....Henry Ford

Waldemar Klassen

WALDEMAR KLASSEN
Director

Notes

From the Director



Agricultural
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Beltsville, Maryland

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March 1987

Beltsville Symposium

Final registrations are now being accepted for the XII Annual Beltsville Symposium in Agricultural Research. The Symposium will be on May 3-7, and the theme this year is "Biomechanisms Regulating Growth and Development: Keys to Progress." Terry B. Kinney, Jr., Administrator of ARS, will give the opening presentation on Monday morning. Other speakers include key scientists representing the broad sweep of research in both the animal and plant sciences. If you have not registered, please do so. Call 344-2506 if you need registration information.

Owens Appointed Research Leader

Lowell D. Owens, Research Plant Physiologist, has been appointed as Research Leader of the Tissue Culture and Molecular Biology Laboratory in the Plant Physiology Institute. Dr. Owens is an authority in the area of cell and tissue culture biology. He has worked extensively on the transfer and expression of foreign genes in crop plants. Dr. Owens organized and chaired the very successful 1982 Beltsville Symposium on Genetic Engineering: Applications to Agriculture.

Owens received his B.S. degree from the University of Nebraska in 1952 and M.S. from Michigan State University. He completed a Ph.D. in agronomy at the University of Illinois in 1958. Upon completing his graduate work, he was hired by ARS. He has been stationed at Beltsville as well as other ARS locations in New York and South Carolina.

Program Increases and Facility Improvements

Dr. Kinney has released the following FY 1987 budget increases to the Beltsville Area.

<u>Research Program/Management Unit</u>	<u>Amount</u>
Lightly processed fruits and vegetables Horticultural Crops Quality Lab, HSI	\$270,000
Gene mapping in soybeans Plant Molecular Genetics Lab, PGGI	180,000
Energy utilization in humans Energy & Protein Nutrition Lab, BHNRC	168,750
Germplasm evaluation of small fruit crops Fruit Lab, HSI	135,000

Germplasm evaluation and enhancement of florist crops Florist & Nursery Crops Lab, HSI	135,000
Virus indexing of clonally propagated crops Glenn Dale Plant Introduction Station, PGGI	135,000
Restoration of Gramm-Rudman-Hollings funds U.S. National Arboretum	107,000
Analytical methods for food composition Nutrient Composition Lab, BHNRC	56,250
Control of potato scab disease Vegetable Lab, HSI	45,000

In addition to these increases for specific program areas, the FY 87 budget also included \$1 million for Renaissance 93 to restore and upgrade programs, facilities, and equipment at Beltsville. Current plans are to use these funds to complete the animal metabolism facility, renovate a greenhouse, procure one plant growth chamber, and initiate the design for roof repairs on some of our major buildings.

Last year through the assistance of Dr. Kinney, two new small animal buildings were completed. One provides modern facilities for gene transfer experiments in livestock and the other is used for research on livestock parasites. A major renovation has begun on Building 006 for research on plant molecular genetics. This should be completed by the end of the calendar year. Repairs are underway to improve the streets, sidewalks, and drainage systems in the vicinity of Circle Drive. Finally, a phased plan to repair or replace the steam and water lines is being implemented. Much remains to be done, but we are moving ahead with available resources.

Research
Associates for
1987

T. B. Kinney, Jr. has announced the 1987 selection of Research Associate Proposals. Dr. Kinney will provide \$40,000 to support each of these proposals. Additionally, funding may be provided during the second year if a Native American, Black, or Hispanic is successfully recruited as a postdoctoral scientist for the project.

Sixteen projects were approved for the Beltsville Area:

<u>Project (Short Title)</u>	<u>Project Leader</u>
Integration of foreign genes into chromosomes of mammalian embryos	R. J. Wall, ASI

Engineering a plant biosynthetic pathway using molecular genetics	B. F. Matthews, PGGI
Photosystem II, and the 32KDa herbicide target protein	A. K. Mattoo, PPHI
Isolation of membrane receptors for an insect neuropeptide	M. J. Loeb, AEQI
Gene probes for the study of soil microbial ecology	J. S. Karns, AEQI
Molecular basis for regulation of growth in parasitized cattle	J. P. Dubey, API R. Fayer, API T. Elsasser, ASI
Plant hormone biosynthesis	J. D. Cohen, PPHI
Gene cloning to develop resistant biocontrol fungi	S. Mischke, PPI G. C. Papavizas, PPI
Specificity in <u>Rhizobium-legume symbiosis</u>	D. L. Keister, PPHI
Mechanisms of photoregulation in the synthesis of sucrose	R. C. Sicher, PPHI
Classification of the fruit flies in the <u>Anastrepha fraterculus</u> group	A. L. Norrbom, BBII
Role of endonucleases in the expression of dormant genes	G. R. Chandra, PGGI
Elucidation of the structure of insect neuropeptide hormones	A. K. Raina, AEQI
Detection and identification of citrus greening disease organism	E. L. Civerolo, HSI
Symptom expression in transgenic tomato plants	J. M. Kaper, PPI
Mechanisms controlling response of crops to chilling stress	C. Y. Wang, HSI

These research associates will complement our ongoing programs and bring new ideas and expertise to the laboratories. Congratulations to the project leaders who were successful with their proposals. We deeply appreciate the efforts of all who applied.

President's
Competitiveness
Initiative

President Reagan has established a national goal of assuring the competitive preeminence of U.S. into the 21st Century. Achieving that goal is the responsibility of all Americans. The President has launched a six-part program aimed at: (1) increasing investment in human and intellectual capital; (2) promoting the development of science and technology; (3) better protecting intellectual property; (4) enacting essential legal and regulatory reforms; (5) shaping the international economic environment; and (6) eliminating the budget deficit.

The President proposes to expand support for basic research in FY 1988. For example, the President has requested funding for a \$10 million basic plant sciences program with the funds to be divided equally among the USDA's Competitive Grants Program, the Department of Energy, and NSF. Level III Directors can provide additional information.

A Beltsville
Menu for
Improved Health

Nutrition is a key factor influencing our potential to live longer and more productive lives. Scientists in the Beltsville Human Nutrition Research Center (BHNRC) have recently developed a new 7-day menu which meets the recommendations of major U.S. health organizations and promotes improved health. This menu, comprised of commonly consumed foods, made minimal changes in the typical U.S. diet so that the amounts of protein, fat, cholesterol, sugar, salt, and fiber were optimal for health maintenance.

In a recent paper prepared for the Journal of the American Dietetic Association, Judith Hallfrisch and colleagues in BHNRC reported that the menu was fed to 53 men and women ages 23-65 for 13 weeks. Consumption of this diet resulted in decreases in blood cholesterol, blood pressure, and blood glucose levels while weight was maintained. The study shows that diet can make a difference even without weight loss.

Agricultural
Runoff in Salt
Marshes

Much of the runoff from agricultural lands near estuaries (such as the Eastern Shore areas of the Chesapeake Bay) flow through salt marshes before entering the estuary. Concern has been raised that pesticides in agricultural runoff may adversely affect the highly productive and ecologically important salt marshes. Information on the fate and persistence of pesticides under simulated salt marsh conditions is vital to understanding the influence of agricultural practices on water quality in these estuaries.

Allan R. Isensee, Plant Physiologist in the Pesticide Degradation Laboratory, AEQI, has developed a model salt marsh microecosystem to study the effect of simulated tidal flux conditions on atrazine movement and persistence in estuarine sediment. Results of his recent studies showed that atrazine, a widely used, moderately persistent herbicide, was rapidly adsorbed and/or metabolized by the high organic matter sediment. This suggests that the water-sediment interactions caused by tidal fluctuation in salt marshes may function to inactivate pesticides and substantially impede pesticide input to the estuary.

New Monograph on Moths

Ronald W. Hodges, Research Entomologist in the Systematic Entomology Laboratory, BBII, has published a major new taxonomic monograph describing 41 new species and a new genus of moths. A new classification was developed to enable the recognition, for the first time, of the 84 North America species of small moths in the subfamily Dichomeridinae, family Gelechiidae. The larvae of these moths are primarily leaf tiers, or occasionally leaf rollers, but some feed within flower heads and seed pods, form stem or root galls, or form mines in needles or leaves. They feed on several plant families and are agricultural pests of fruit trees, ornamental shrubs, and legumes. The pink bollworm, a gelechiid, is one of the world's worst pests of cotton. This pest is responsible for reducing cotton acreage in Southern California from 250,000 acres to 15,000 acres during the past 15 years.

This monograph includes illustrations of diagnostic characters, color photographs of adult moths of all species, data on life histories, larval hosts, geographic and temporal distribution; and keys to the identification of the three gelechiid subfamilies and all the species of Dichomeridinae. This publication provides action/regulatory agencies, such as APHIS/PPQ, with tools to identify dichomeridine moths and to extrapolate the potential pest status of introduced species.

Germplasm Resources for Strawberry Growers

Verticillium wilt is a disease of major concern to strawberry growers nationwide. Annually, millions of dollars are spent on fumigation of soils for the control of this disease. Soil fumigation is often objectionable for reasons of cost and environmental concerns. One of the major goals of the USDA/ARS small fruit improvement program is to develop cultivars resistant to this disease. Continuing efforts are required to breed for resistance as new cultivars become popular, replacing older ones, and because different strains of the fungus exist and continually pose a threat even to resistant cultivars.

John Maas and Gene Galletta, Fruit Laboratory, HSI, have recently evaluated 18 strawberry cultivars plus a selection and a clone of the wild strawberry of the West Coast. A California strain of Verticillium is highly pathogenic to most eastern cultivars; however, 'Aberdeen', 'MD-683', and 'Del Norte' were found to be highly resistant. These provide a source of germplasm for future breeding work.

Arboretum
Horticulturist
Honored

Donald R. Egolf, noted research horticulturist and plant breeder at the U. S. National Arboretum, was honored in November by the Pennsylvania Horticultural Society with its highest award, the Distinguished Achievement Medal. Dr. Egolf was cited for his long-term breeding programs with ornamental shrubs, especially for one of his most widely produced ornamental plants, Pyracantha x 'Mohave'. He has worked intensively with 12 different genera and released over 30 new cultivars. In late 1986, Dr. Egolf also released four new cultivars of crape-myrtle -- 'Acoma', 'Hopi', 'Pecos', and 'Zuni', the first semi-dwarf L. indica x L. fauriei cultivars that combine mildew resistance; fine-textured dark green foliage in summer and brilliant autumn coloration; white, clear light pink, medium pink, and medium lavender flower colors; and dense-branched, compact-mound growth habit.

Dr. Egolf has received numerous other awards for his research, including the Norman J. Colman Award of the American Association of Nurserymen and commendations from the Royal Horticultural Society.

Hilton Lauded
by Weed
Scientists

J. L. Hilton, Director of the Agricultural Environmental Quality Institute, has received a Special Award from the Weed Science Society of America in recognition of outstanding and meritorious service during his 9-year term as Editor-in-Chief and member of the Executive Committee and Board of Directors. Among Dr. Hilton's major contributions were the initiation, organization, and successful production of new publications for symposia, monographs, annual reviews, and the new scientific journal Weed Technology. Special Awards are in addition to the normal awards program and have been granted only four times in the 30-year history of the Society.

Royal Society
Fellow

William P. Wergin, Research Leader, Plant Stress Laboratory, PPHI, has been notified of his election to Fellow of The Royal Microscopical Society. The Society was established in 1839 and incorporated by Royal Charter in 1866. The Patron of The Society is Her Most Gracious Majesty, Queen Elizabeth II.

Scientists
Elected to
Leadership Roles

Douglas C. Ferguson, Research Entomologist, Systematic Entomology Laboratory, BBII, has been elected President of The Lepidopterists' Society. This is the major international society of entomologists concerned with all aspects of research on moths and butterflies. With more than 1,500 members, it is believed to be the second largest entomological society in the Western Hemisphere.

Patricia A. Pilitt, Zoologist, Biosystematic Parasitology Laboratory, API, is the newly elected President of the Helminthological Society of Washington for 1987.

J. Ralph Lichtenfels, Research Leader, Biosystematic Parasitology Laboratory, API, has been elected Vice-President of the American Society of Parasitologists.

Manya B. Stoetzel, Research Entomologist, Systematic Entomology Laboratory, BBII, has been voted 1987 President-Elect of the American Association for Zoological Nomenclature (AAZN). She will serve as President in 1988. The AAZN was formed in 1984 to provide an opportunity for those who use the names of animals to support the International Commission of Zoological Nomenclature that governs the applications of those names.

Paul Terry, Research Chemist, Plant Hormone Laboratory, PPHI, has been elected to serve as President of the Chemical Society of Washington (CSW). Celebrating its 103rd year, CSW lists over 4,100 members in the Washington Metropolitan Area. The Society is one of the oldest and largest local sections of the American Chemical Society, the largest professional organization in the United States.

Drug Abuse
Helpline

Drug abuse is a significant public health problem. Charles R. Schuster, Director of the National Institute on Drug Abuse (NIDA), reports that approximately 19 percent of Americans over age 12 have used illicit drugs sometime during the last year. Among 18- to 25-year-olds, representing young adults just entering the work force, 65 percent have experience with illicit drugs, 42 percent within the last year. The abuse of alcohol and drugs costs society nearly 100 billion dollars in lost productivity each year. The human costs to society and the social, economic, and legal costs have created a new awareness of the multifaceted problems that result from substance abuse. Action must be taken to reduce these costs.

As part of President Reagan's Campaign on Drug Abuse, the NIDA has established a toll-free telephone Helpline, 800-843-4971, to provide you with information about ways to combat drugs in the workplace. The Helpline is staffed Monday through Friday from 9:00 a.m. to 8:00 p.m.

Drug Abuse Initiative

President Reagan and the First Lady continue to encourage initiatives to prevent drug abuse. Accordingly, Secretary Lyng has asked Deputy Secretary Myers and Mr. John W. Bode, Assistant Secretary for Food and Consumer Services to provide leadership to develop a Department wide "Just Say No" program and to coordinate Agency inputs. Each Agency will submit a draft plan by April 3, 1987, to Assistant Secretary Bode. The program will emphasize community outreach efforts.

Conference Room Users

Frequently, groups that use conference rooms at the Center do not bring with them the supplies that are needed. They then go to nearby offices for supplies and equipment. With the conference rooms so frequently scheduled, this can become a constant disruption to offices adjacent to the conference rooms. Please remember to bring with you the equipment and supplies needed for conferences to avoid disrupting work in nearby offices.

Cash Awards

John Munns, Accounting Technician, Animal Science Institute - For diligent and accurate maintenance of accounts in the Animal Science Institute.

Arland David Hill, Chemist, Vitamin and Mineral Nutrition Laboratory, BHNRC - For establishing the accuracy and validity of an ashing procedure for inorganic elemental analysis of biological samples and publishing the results in a prestigious scientific journal.

Robert M. Goeken, Biological Laboratory Technician, Plant Molecular Genetics Laboratory, PGGI - For continued high performance of molecular techniques and gene expression research with higher plants.

Albert B. DeMilo, Research Chemist, Insect Reproduction Laboratory; Richard W. Miller, Research Animal Scientist; and Robert E. Redfern, Research Chemist, Livestock Insects Laboratory, AEQI - Initial Invention Award for Serial No. 882,104, "Control of the lesser mealworm."

Stephen P. Dubik, Biological Laboratory Technician, Plant Stress Laboratory, PPHI - For significant cost-saving and innovative design and operation of plant propagation facilities in the Plant Stress Laboratory from 1980 to 1986.

Patricia L. Quade - Clerk-Typist, Animal Improvement Programs Laboratory, ASI - For exceptional performance during the period June through September 1986, when the Laboratory had no other experienced clerical help.

Kevin J. Ball - Automotive Mechanic, Farm Management Branch, DO - Outstanding performance of assigned duties in the Forage Production Section of the Farm Management Branch.

Everett D. DeVilbiss - Chemist, Insect Chemical Ecology Laboratory, AEQI - For excellence in instrument maintenance and data acquisition in support of many research projects in the Insect Chemical Ecology Laboratory.

Quality Increase

Daniel J. Scholfield - Biological Laboratory Technician, Carbohydrate Nutrition Laboratory, BHNRC - For superior technical support of nutrition research experiments involving: glycemic responses to amylose and amylopectin in humans, carbohydrate-mineral interactions in swine, and chelating properties of certain high and low fiber diets in humans.

Sharon M. Schleupner, Secretary-Typing, Soilborne Diseases Laboratory, PPI - For sustained highly competent and outstanding performance in a critical period in the Soilborne Diseases Laboratory.

Rose T. Mayhew, Secretary-Typing, Model and Database Coordination Laboratory, ASRI - For excellence in helping establish the new office for the Model and Database Coordination Laboratory.

Cynthia G. Hanna, Secretary-Typing, Ruminant Nutrition Laboratory, ASI - For exemplary performance in maintaining continuity of procedures and daily routines of the Ruminant Nutrition Laboratory office serving 13 scientists during a period of change in Laboratory leadership and clerk-typist support.

Epilogue

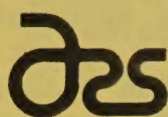
Doing research well, although necessary, is no longer sufficient. Selecting research problems well is an equally important process in an effective public research program. -----Colien Hefferan

Waldemar Klassen

WALDEMAR KLASSEN
Director
Beltsville Area

Notes

From the Director



Agricultural
Research
Service

United States
Department of
Agriculture

Beltsville, Maryland

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June 1987

Diener Receives National Medal of Science

Theodor O. Diener, Microbiology and Plant Pathology Laboratory, PPI, was selected to receive the National Medal of Science, the highest distinction in sciences in the United States. This award was presented in the White House Rose Garden by President Reagan on June 25, 1987.

Dr. Diener is the celebrated discoverer of viroids, the smallest known agents of infectious disease that consist of short strands of RNA. Viroids are widely implicated in plant diseases worldwide and are receiving increased attention as possible agents of disease in animals.

Diener, a member of the National Academy of Sciences, recently received the 1987 Wolf Prize in Agriculture which included an award of \$100,000 for his research contributions of broad benefit to mankind.

Finney Assigned to North Atlantic Area

Essex E. Finney, Jr., has been detailed to the North Atlantic Area as Acting Associate Director. This will become a position within the Senior Executive Service. Finney was reared on a 200-acre hog-and-tobacco farm 30 miles west of Richmond. Finney began his quest to become an agricultural engineer in 1954 by enrolling in Virginia State College. In 1958 Governor J. Lindsay Almond intervened to allow Finney to enroll in Virginia Polytechnic Institute, which was still segregated. Finney completed his Post-Graduate program at Pennsylvania State and Michigan State Universities. In 1965, Finney began his ARS career in Beltsville's Instrumentation Research Laboratory. In 1972, Finney was selected to chair the Agricultural Marketing Research Institute, and in 1977 he was appointed Assistant Director of the Beltsville Center; and in 1983, he was appointed Associate Director of the Beltsville Area. Finney rapidly gained recognition as a capable science administrator. In 1973, he studied at the Woodrow Wilson School of Public Affairs, Princeton University as the Princeton Fellow in Public Affairs. In 1980 he served in the Office of Science and Technology Policy, Executive Office of the President. Dr. Finney will be long and warmly remembered for the very high standards that he has set in research and in administration at Beltsville.

Murrell Named
Acting Associate
Area Director

Terry B. Kinney, Jr., Administrator of ARS, has selected K. Darwin Murrell as the the new Acting Associate Director of th Beltsville Area. This is a part of the realignment of ARS, which resulted in the reduction of the Areas from eleven to eight. Dr. Murrell has served as Research Leader for the past 9 years of the Helminthic Disease Laboratory, Animal Parasitology Institute.

Murrell, a native of California, joined ARS at BARC in 1978. He majored in biology at California State University and completed the requirements for the undergraduate degree in 1962. He then entered the University of North Carolina and completed work for his Ph.D. in 1969, majoring in parasitology and public health. Dr. Murrell also served as a Postdoctoral Fellow at the University of Chicago from 1969-71.

Dr. Murrell is widely recognized for his outstanding research on livestock parasites. He is especially noted for his contributions to the development of methods for detecting and controlling trichinosis in swine. In recognition of his outstanding research achievements, Dr. Murrell was selected in 1984 as the ARS Scientist of the Year.

Mertz to Receive
International
Nutrition Award

Walter Mertz, Director of the Beltsville Human Nutrition Research Center, has been selected to receive the 1987 International Award for Modern Nutrition. This honor is bestowed upon Dr. Mertz in recognition of his research in trace elements. Walter Mertz is internationally recognized for his outstanding discoveries in the area of trace mineral requirements, including zinc, copper, selenium, cobalt, iron, and especially chromium as an essential nutrient. He discovered the critical role of chromium in the human diet. Largely as a result of his initial discovery and subsequent studies, chromium was recognized as an essential nutrient by the National Academy of Sciences in 1980.

Dr. Mertz joined ARS as Chief of the Vitamin and Mineral Nutrition Laboratory in 1969. Prior to that time, he served as a distinguished scientist at the Walter Reed Army Medical Center and the National Institutes of Health. As Director of the Beltsville Human Nutrition Research Center, he is responsible for planning and directing a comprehensive human nutrition research program in the areas of energy, proteins, lipids, carbohydrates, vitamins, minerals and nutrient composition of foods.

Mertz serves on numerous committees and international scientific bodies, including those of the World Health Organization and study panels of the National Research Council, National Academy of Sciences.

Dr. Mertz will receive his award on Tuesday, September 15, 1987, at Brig, Switzerland. As the prize winner, he has been invited to give a special scientific lecture during the award ceremony on recent developments in research on trace elements.

Superior Service Award to Kearney

The Honorable Richard E. Lyng, Secretary of Agriculture, has presented the USDA Superior Service Award to Philip C. Kearney, Research Leader, Pesticide Degradation Laboratory, AEQI. The award was given at the 1987 Department Honor Awards Program in Washington, D.C. on June 10th. Dr. Kearney was cited for his outstanding research in chemical and biological methods for degradation of pesticide wastes which have the potential to greatly reduce the environmental impact of pesticide use.

Dr. Kearney, a Ph.D. graduate of Cornell, joined ARS at Beltsville in 1962 as a Research Biochemist. He has published over 200 papers dealing with the distribution and degradation of pesticides and toxic substances in the environment. Kearney is the past Chair of the Pesticide Chemistry Division, American Chemical Society (ACS). In 1981 he received the International Award for Research in Pesticide Chemistry from the ACS. He also was honored in 1983 by the International Union of Pure and Applied Chemistry for his distinguished service in advancing pesticide chemistry. Last year, Dr. Kearney was selected the ARS Distinguished Scientist of the Year.

Research on Forage Quality Cited

A USDA Superior Service Group Achievement Award was presented to Karl H. Norris and other ARS scientists during the 1987 Department Honor Awards Program on June 10th. Norris, Research Leader of the Instrumentation Research Laboratory, SCSL, has worked with other ARS and State Agricultural Experiment Station scientists to develop near infrared reflectance spectroscopy (NIRS) as a system for the rapid measurement of the nutritive value of forages and foodstuffs. NIRS is a powerful new tool for evaluating the quality of agricultural products. This technique has been extensively tested and is widely used now in a national program for evaluating the nutritional value of forages on the farm.

Biological
Control of
Alfalfa Weevils

The Biosystematics and Beneficial Insects Institute (BBII) has good reason to be particularly proud of three of its entomologists. Because of their outstanding cooperative efforts to develop and implement a successful biological control program against the previously highly destructive alfalfa weevil, the USDA Honor Award for Superior Service was presented on June 10th to Jack R. Coulson and John J. Drea, Jr., (Beneficial Insects Laboratory, BBII) and posthumously to Reece I. Sailer, first Chair of the former Insect Identification and Beneficial Insect Introduction Institute. These three ARS entomologists as well as 17 other researchers (6 from ARS and 11 from APHIS) of the APHIS-ARS Group on Alfalfa Weevil Biological Control received the award for group achievement. This highly successful project is one of the largest and most comprehensive biological control efforts ever attempted within the U.S.

The alfalfa weevil was accidentally introduced into the eastern United States from the Old World in the early 1950's without the natural enemies that control its populations in its native area. It quickly became the most serious pest of alfalfa in the U.S. Research efforts to locate its natural enemies began in 1959 with foreign exploration conducted by entomologists at the ARS European Parasite Laboratory in Paris, France. Natural enemies were received, evaluated, released, and established by entomologists at the ARS Beneficial Insects Research Laboratory at Newark, Delaware.

Since the project was initiated, a total of 12 exotic beneficial insects, all parasites, have been discovered and imported into the U.S. to control the alfalfa weevil. The first parasites were released in 17 northeastern states. Six species had become established by 1980, and they controlled weevil populations so effectively that insecticidal spraying was discontinued in 73 percent of the alfalfa fields. In New Jersey alone, the percentage of alfalfa fields that required spraying dropped from 96 percent in 1966 to a mere 8 percent by 1970. Annual savings estimated at \$65 million have been realized by alfalfa growers in the U.S. as a result of this project.

Phytopath
Society
Honors Lawson

Dr. Roger H. Lawson, Research Leader of Florist and Nursery Crops Laboratory, has been named a Fellow of the American Phytopathological Society for 1987. He will be honored at an awards ceremony during the APS Annual Meeting, August 2-6, 1987, in Cincinnati, Ohio.

Selection as a Fellow of the Society is a reflection of the high esteem in which a member is held by his colleagues. The award is given in recognition of outstanding contributions in extension, research, teaching, or other activity related to the science of plant pathology, to the profession, or to the Society. Dr. Lawson is recognized for his research on ornamental plants including the development of the first certification program in the nation for production of virus-free orchids, for initiating the development of financial support for a national program in plant virology at the American Type Culture Collection, for contributions in plant virus hybridoma technology, and for the development of many polyclonal antisera included in the ATCC bank of plant virus antisera.

ACS Lauds Young
Scientist

Cathleen Joan Somich, Research Chemist, Pesticide Degradation Laboratory, AEQI, is the first winner of the American Chemical Society's (ACS) Agrochemicals Division Research Award for young scientists.

Dr. Somich won this Postdoctoral Research Award for scientists who received their Ph.D. within the last 5 years. She won the award based on her research on the chemistry of alachlor degradation by ultraviolet light and ozone. Dr. Somich will receive an award scroll, a cash award, and will be honored at a special symposium at the American Chemical Society meeting in New Orleans, August 30-September 4, 1987.

Dr. Somich received her Ph.D. from the University of Maryland in 1985 and soon thereafter was hired by ARS at Beltsville.

ARS Scientist
Appointed to Board
on Agriculture

William Brown, Chairman of the Board on Agriculture of the National Research Council (NRC), recently announced that Karl H. Norris has been appointed to a 3-year term on the Board. Mr. Norris, Research Leader of the Instrumentation Research Laboratory, SCSL, was selected because of his extensive and varied experience in food technology and instrumentation.

Mr. Norris is also a member of the National Academy of Engineering. NRC is the principal operating agency of the National Academy of Sciences and the National Academy of Engineering.

The Board on Agriculture is one of eight units of the National Research Council. It is responsible for addressing issues in the areas of plant and animal sciences and renewable resources.

Disease
Resistance in
Plants

One of the long-term goals of agricultural researchers is to develop a clear understanding of the molecular events which determine the susceptibility or resistance of plants to disease-causing organisms (pathogens). Until this knowledge base is established, it will be difficult to apply available genetic engineering technologies to develop disease resistant plants.

C. Jacyn Baker and coworkers in the Microbiology and Plant Pathology Laboratory, PPI, recently reported on their studies on induced resistance in plants. Their paper clearly demonstrates the key and possible causal role played by host plasma membrane K^+/H^+ exchange during the hypersensitive response. This is important because this is the first biochemical process which has been conclusively linked to pathogenesis. This finding will allow future workers to monitor K^+/H^+ exchange as an indicator of the onset of resistance or susceptibility, thus providing a quantitative and rapid assay. Such an assay should greatly aid further investigations of the molecular events involved in plant disease.

Beneficial
Fungus Against
Wilt Disease

The soilborne plant pathogen Verticillium dahliae causes a wilt disease on over 250 different species of plants. For most of these plants there is no known resistance to this pathogen and no fungicides are available for the practical control of this pathogen. The naturally-occurring, beneficial fungus Talaromyces flavus has been effective in controlling Verticillium wilt of eggplants and potatoes under field conditions.

Kay Kwang-Ae Kim, Deborah R. Fravel and other scientists in the Soilborne Diseases Laboratory, PPI, have conducted studies to determine how T. flavus controls V. dahliae. Their research showed that a metabolite is produced in culture by T. flavus and this metabolite has antifungal activity against V. dahliae in vitro and in soil. The findings are significant because an enzyme, glucose oxidase, is implicated (for the first time) in the mechanism of action of the beneficial fungus against the wilt pathogen. If scientists can clearly define the mechanism of action, then it would be possible to produce biotypes of the beneficial fungus with enhanced production of the metabolite that brings about biological control.

Catalog of Noctuid Moths

Noctuid moths include some of the most important insect pests of crops known to man and cost farmers billions of dollars each year. Some of the most notorious species are corn earworm, tobacco budworm, fall armyworm, cutworms, spiny bollworm, and many, many more. Robert Poole, Research Entomologist, Systematic Entomology Laboratory, BBII, has recently completed a major paper (7,000 pages) on noctuid moths of the world. This research paper provides the first catalog of the approximated 50,000 noctuid species and will be a basic reference for diverse efforts aimed at controlling these important agricultural pests. An index is included, listing all recognized species group names by original combination and giving the currently recognized generic placement. There is a terminal bibliography listing without abbreviations of all the references cataloged in this work.

Until now, researchers have experienced significant difficulty in ascertaining the correct name of species, the synonymous names of species, and references to important biological and taxonomic information. This research will alleviate these problems.

Modeling Snowmelt Runoff

Albert Rango and Ralph Roberts of the Hydrology Laboratory, ASRI, received the "Best Paper Award" at the 55th Annual Western Snow Conference in Vancouver, British Columbia, in April. The paper was entitled "Snowmelt-Runoff Modeling in the Microcomputer Environment." During the presentation the authors used state-of-the-art technology to involve the audience by running the model in real time and projecting the results onto a large screen.

Student Wins Prize

Keith Furman, a University of Maryland student who works with Lowell Woodstock in the Germplasm Quality and Enhancement Laboratory, PGGI, won first prize for student presentations at the annual meeting of the Washington Section of the American Society for Plant Physiology (ASPP) earlier this spring.

The subject of Furman's presentation was "The effect of aging on mitochondrial proteins in germinating soybean seed axes."

Mr. Furman received this award at the Banquet. The award includes a check in the amount of \$500 to be used for educational purposes.

Conference
Room Users

There have been occasional unpleasant experiences when a group scheduled for an evening meeting arrived and found that another group was using the room. If your group will need the room longer than originally scheduled, or will need to leave paperwork in the room overnight, please check to make sure, that by doing so, you are not causing a conflict of schedules. Day and evening meetings must be scheduled with the Visitors Center (344-2403).

Cash Awards

Jeffrey R. Aldrich, Research Entomologist, Plant Protection Institute - Invention award for issuance of U.S. Patent 4,600,581, "Synthetic Pheromones for the Spined Soldier Bug, Podisus maculiventris".

Cissel Archer, General Foreman, Division of Operations - Outstanding performance in carrying out assigned duties in the Utilities and Services Section of the Division of Operations.

Merelee M. Atkinson, Research Plant Pathologist, Microbiology & Plant Pathology Lab., Plant Protection Institute - For superior performance in elucidating the molecular basis for host/pathogen recognition.

Norita Chaney, Biologist, Plant Stress Lab., Plant Physiology Institute - For maintaining high productivity, mutual cooperation and professional expertise in executing duties in the Electron Microscopy Facility.

Shawn D. Conrad, Biological Lab Technician, Helminthic Diseases Lab., Animal Parasitology Institute - For originality, independence and exceptional performance in execution of experiments to elucidate the endocrinology of the host/parasite relationship.

Herbert D. Clark, Biological Lab. Technician, Plant Hormone Lab., Plant Physiology Institute - For outstanding service in promoting a safe working environment for the employees of the Plant Physiology Institute.

Debbie J. Creel, Clerk Typist, U.S. National Arboretum - For sustained superior performance and for typing and clerical assistance to the Director's Office and Research Unit at the National Arboretum.

Jitender P. Dubey, Microbiologist, Protozoan Diseases Lab., Animal Parasitology Institute - For leadership in research in transmission of toxoplasmosis from meat animals to humans.

Eric Erbe, Plant Stress Lab., Plant Physiology Institute For maintaining high productivity, mutual cooperation and professional expertise in executing duties in the Electron Microscopy Facility.

L. C. Frazier, Plant Stress Lab., Plant Physiology Institute - For maintaining high productivity, mutual cooperation and professional expertise in executing duties in the Electron Microscopy Facility.

Peggy F. Hall, Horticultural Crops Quality Lab., Horticultural Science Institute - For sustained superior performance on assignments beyond her described duties.

Jeanne H. Hagan, Nematology Lab., Plant Protection Institute - Performing additional duties while maintaining superior performance in assigned job. These duties include maintenance of IBM copier for Bldg. & preparing ARMPS for 2 laboratories.

Gretchen Kaminski, Biologist, Plant Stress Lab., Plant Physiology Institute - For maintaining high productivity, mutual cooperation and professional expertise in executing duties in the Electron Microscopy Facility.

Roy Clyde Kimmell, Air Cond. Equip. Mech., Maintenance & Construction Branch, Division of Operations - Outstanding work performance in the Refrigeration and Air Conditioning Shop.

Anthony J. Messineo, Air Cond. Equip. Mech., Leader, Maintenance & Construction Branch, Division of Operations - Outstanding work performance in the Refrigeration and Air Condition Shop.

Kenneth D. Murrell, Supv. Microbiologist, Helminthic Diseases Lab., R.L., Animal Parasitology Institute - For leadership in establishing the nature of the protective immune response of swine to trichinellosis.

Marjorie B. Nichols, Biological Lab. Technician, Protozoan Diseases Lab., Animal Parasitology Institute For her outstanding technical assistance in the study of avian immunity to coccidiosis.

Lowell D. Owens, Plant Physiologist, Tissue Culture & Molecular Biology Lab., Plant Physiology Institute
For outstanding service as Acting Research Leader of the Tissue Culture and Molecular Biology Laboratory, PPHI, for most of the period from June 1983 to the present.

Robert W. Reise, Biological Lab. Technician, Nematology Lab., Plant Protection Institute - Conducting independent research while maintaining superior performance in assigned job. This includes development of new techniques for rearing plant parasitic nematodes that resulted in journal publication.

Michael D. Ruff, Supervisory, Microbiologist, Protozoan Diseases, R.L., Animal Parasitology Institute - For leadership in establishing cooperative research with industry on coccidiosis and in developing treatment for coccidiosis in minor species (game birds).

Sylvia B. Stephens, Secretary, Research Unit, U.S. National Arboretum - For excellence in the initial organization and subsequent efficient operation of secretarial support services.

Shirley A. Weese, Secretary, Vitamin & Mineral Nutrition Lab., Beltsville Human Nutrition Research Center - In recognition of exemplary service by willingly accepting additional duties thereby maintaining office productivity during a clerical vacancy.

David L. Wood, Chemist, Milk Secretion & Mastitis Lab., Animal Science Institute - Exceptional performance in analyzing lipids in cow and human milk and in analyzing lipids of teat canal keratin in cows.

Larry T. Young, Biologist Lab. Tech., Animal Parasitology Institute - In processing specimens, increased productivity of the unit.

Quality Increase

Janet M. Bartholow, Secretary-typing, Fruit Lab., Horticultural Science Institute - For effectively providing exceptional secretarial and administrative support in the research mission of the Fruit Laboratory.

Thomas B. Jacobs, Jr., Biological Laboratory Technician, Ruminant Nutrition Lab., Animal Science Institute - For exceptional performance and dedication to our research effort involving intensive animal experimentation and analytical procedures.

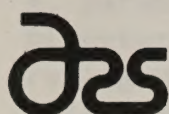
Epilogue

If you aren't fired with enthusiasm, you'll be fired with enthusiasm. Vince Lombardi.

Waldemar Klassen

Notes

From the Director



Agricultural
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173

June 1987

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The Biosystematics and Beneficial Insects Institute (BBII) has good reason to be particularly proud of three of its entomologists. Because of their outstanding cooperative efforts to develop and implement a successful biological control program against the previously highly destructive alfalfa weevil, the USDA Honor Award for Superior Service was presented on June 10th to Jack R. Coulson and John J. Drea, Jr., (Beneficial Insects Laboratory, BBII) and posthumously to Reece I. Sailer, first Chair of the former Insect Identification and Beneficial Insect Introduction Institute. These three ARS entomologists as well as 17 other researchers (6 from ARS and 11 from APHIS) of the APHIS-ARS Group on Alfalfa Weevil Biological Control received the award for group achievement. This highly successful project is one of the largest and most comprehensive biological control efforts ever attempted within the U.S.

The alfalfa weevil was accidentally introduced into the eastern United States from the Old World in the early 1950's without the natural enemies that control its populations in its native area. It quickly became the most serious pest of alfalfa in the U.S. Research efforts to locate its natural enemies began in 1959 with foreign exploration conducted by entomologists at the ARS European Parasite Laboratory in Paris, France. Natural enemies were received, evaluated, released, and established by entomologists at the ARS Beneficial Insects Research Laboratory at Newark, Delaware.

Since the project was initiated, a total of 12 exotic beneficial insects, all parasites, have been discovered and imported into the U.S. to control the alfalfa weevil. The first parasites were released in 17 northeastern states. Six species had become established by 1980, and they controlled weevil populations so effectively that insecticidal spraying was discontinued in 73 percent of the alfalfa fields. In New Jersey alone, the percentage of alfalfa fields that required spraying dropped from 96 percent in 1966 to a mere 8 percent by 1970. Annual savings estimated at \$65 million have been realized by alfalfa growers in the U.S. as a result of this project.

Phytopath
Society
Honors Lawson

Dr. Roger H. Lawson, Research Leader of Florist and Nursery Crops Laboratory, has been named a Fellow of the American Phytopathological Society for 1987. He will be honored at an awards ceremony during the APS Annual Meeting, August 2-6, 1987, in Cincinnati, Ohio.

Selection as a Fellow of the Society is a reflection of the high esteem in which a member is held by his colleagues. The award is given in recognition of outstanding contributions in extension, research, teaching, or other activity related to the science of plant pathology, to the profession, or to the Society. Dr. Lawson is recognized for his research on ornamental plants including the development of the first certification program in the nation for production of virus-free orchids, for initiating the development of financial support for a national program in plant virology at the American Type Culture Collection, for contributions in plant virus hybridoma technology, and for the development of many polyclonal antisera included in the ATCC bank of plant virus antisera.

ACS Lauds Young
Scientist

Cathleen Joan Somich, Research Chemist, Pesticide Degradation Laboratory, AEQI, is the first winner of the American Chemical Society's (ACS) Agrochemicals Division Research Award for young scientists.

Dr. Somich won this Postdoctoral Research Award for scientists who received their Ph.D. within the last 5 years. She won the award based on her research on the chemistry of alachlor degradation by ultraviolet light and ozone. Dr. Somich will receive an award scroll, a cash award, and will be honored at a special symposium at the American Chemical Society meeting in New Orleans, August 30-September 4, 1987.

Dr. Somich received her Ph.D. from the University of Maryland in 1985 and soon thereafter was hired by ARS at Beltsville.

ARS Scientist
Appointed to Board
on Agriculture

William Brown, Chairman of the Board on Agriculture of the National Research Council (NRC), recently announced that Karl H. Norris has been appointed to a 3-year term on the Board. Mr. Norris, Research Leader of the Instrumentation Research Laboratory, SCSL, was selected because of his extensive and varied experience in food technology and instrumentation.

Mr. Norris is also a member of the National Academy of Engineering. NRC is the principal operating agency of the National Academy of Sciences and the National Academy of Engineering.

The Board on Agriculture is one of eight units of the National Research Council. It is responsible for addressing issues in the areas of plant and animal sciences and renewable resources.

Disease
Resistance in
Plants

One of the long-term goals of agricultural researchers is to develop a clear understanding of the molecular events which determine the susceptibility or resistance of plants to disease-causing organisms (pathogens). Until this knowledge base is established, it will be difficult to apply available genetic engineering technologies to develop disease resistant plants.

C. Jacyn Baker and coworkers in the Microbiology and Plant Pathology Laboratory, PPI, recently reported on their studies on induced resistance in plants. Their paper clearly demonstrates the key and possible causal role played by host plasma membrane K^+/H^+ exchange during the hypersensitive response. This is important because this is the first biochemical process which has been conclusively linked to pathogenesis. This finding will allow future workers to monitor K^+/H^+ exchange as an indicator of the onset of resistance or susceptibility, thus providing a quantitative and rapid assay. Such an assay should greatly aid further investigations of the molecular events involved in plant disease.

Beneficial
Fungus Against
Wilt Disease

The soilborne plant pathogen Verticillium dahliae causes a wilt disease on over 250 different species of plants. For most of these plants there is no known resistance to this pathogen and no fungicides are available for the practical control of this pathogen. The naturally-occurring, beneficial fungus Talaromyces flavus has been effective in controlling Verticillium wilt of eggplants and potatoes under field conditions.

Kay Kwang-Ae Kim, Deborah R. Fravel and other scientists in the Soilborne Diseases Laboratory, PPI, have conducted studies to determine how T. flavus controls V. dahliae. Their research showed that a metabolite is produced in culture by T. flavus and this metabolite has antifungal activity against V. dahliae in vitro and in soil. The findings are significant because an enzyme, glucose oxidase, is implicated (for the first time) in the mechanism of action of the beneficial fungus against the wilt pathogen. If scientists can clearly define the mechanism of action, then it would be possible to produce biotypes of the beneficial fungus with enhanced production of the metabolite that brings about biological control.

Catalog of Noctuid Moths

Noctuid moths include some of the most important insect pests of crops known to man and cost farmers billions of dollars each year. Some of the most notorious species are corn earworm, tobacco budworm, fall armyworm, cutworms, spiny bollworm, and many, many more. Robert Poole, Research Entomologist, Systematic Entomology Laboratory, BBII, has recently completed a major paper (7,000 pages) on noctuid moths of the world. This research paper provides the first catalog of the approximated 50,000 noctuid species and will be a basic reference for diverse efforts aimed at controlling these important agricultural pests. An index is included, listing all recognized species group names by original combination and giving the currently recognized generic placement. There is a terminal bibliography listing without abbreviations of all the references cataloged in this work.

Until now, researchers have experienced significant difficulty in ascertaining the correct name of species, the synonymous names of species, and references to important biological and taxonomic information. This research will alleviate these problems.

Modeling Snowmelt Runoff

Albert Rango and Ralph Roberts of the Hydrology Laboratory, ASRI, received the "Best Paper Award" at the 55th Annual Western Snow Conference in Vancouver, British Columbia, in April. The paper was entitled "Snowmelt-Runoff Modeling in the Microcomputer Environment." During the presentation the authors used state-of-the-art technology to involve the audience by running the model in real time and projecting the results onto a large screen.

Student Wins Prize

Keith Furman, a University of Maryland student who works with Lowell Woodstock in the Germplasm Quality and Enhancement Laboratory, PGGI, won first prize for student presentations at the annual meeting of the Washington Section of the American Society for Plant Physiology (ASPP) earlier this spring.

The subject of Furman's presentation was "The effect of aging on mitochondrial proteins in germinating soybean seed axes."

Mr. Furman received this award at the Banquet. The award includes a check in the amount of \$500 to be used for educational purposes.

Conference
Room Users

There have been occasional unpleasant experiences when a group scheduled for an evening meeting arrived and found that another group was using the room. If your group will need the room longer than originally scheduled, or will need to leave paperwork in the room overnight, please check to make sure, that by doing so, you are not causing a conflict of schedules. Day and evening meetings must be scheduled with the Visitors Center (344-2403).

Cash Awards

Jeffrey R. Aldrich, Research Entomologist, Plant Protection Institute - Invention award for issuance of U.S. Patent 4,600,581, "Synthetic Pheromones for the Spined Soldier Bug, Podisus maculiventris".

Cissel Archer, General Foreman, Division of Operations - Outstanding performance in carrying out assigned duties in the Utilities and Services Section of the Division of Operations.

Merelee M. Atkinson, Research Plant Pathologist, Microbiology & Plant Pathology Lab., Plant Protection Institute - For superior performance in elucidating the molecular basis for host/pathogen recognition.

Norita Chaney, Biologist, Plant Stress Lab., Plant Physiology Institute - For maintaining high productivity, mutual cooperation and professional expertise in executing duties in the Electron Microscopy Facility.

Shawn D. Conrad, Biological Lab Technician, Helminthic Diseases Lab., Animal Parasitology Institute - For originality, independence and exceptional performance in execution of experiments to elucidate the endocrinology of the host/parasite relationship.

Herbert D. Clark, Biological Lab. Technician, Plant Hormone Lab., Plant Physiology Institute - For outstanding service in promoting a safe working environment for the employees of the Plant Physiology Institute.

Debbie J. Creel, Clerk Typist, U.S. National Arboretum - For sustained superior performance and for typing and clerical assistance to the Director's Office and Research Unit at the National Arboretum.

Jitender P. Dubey, Microbiologist, Protozoan Diseases Lab., Animal Parasitology Institute - For leadership in research in transmission of toxoplasmosis from meat animals to humans.

Eric Erbe, Plant Stress Lab., Plant Physiology Institute - For maintaining high productivity, mutual cooperation and professional expertise in executing duties in the Electron Microscopy Facility.

L. C. Frazier, Plant Stress Lab., Plant Physiology Institute - For maintaining high productivity, mutual cooperation and professional expertise in executing duties in the Electron Microscopy Facility.

Peggy F. Hall, Horticultural Crops Quality Lab., Horticultural Science Institute - For sustained superior performance on assignments beyond her described duties.

Jeanne H. Hagan, Nematology Lab., Plant Protection Institute - Performing additional duties while maintaining superior performance in assigned job. These duties include maintenance of IBM copier for Bldg. & preparing ARMPS for 2 laboratories.

Gretchen Kaminski, Biologist, Plant Stress Lab., Plant Physiology Institute - For maintaining high productivity, mutual cooperation and professional expertise in executing duties in the Electron Microscopy Facility.

Roy Clyde Kimmell, Air Cond. Equip. Mech., Maintenance & Construction Branch, Division of Operations - Outstanding work performance in the Refrigeration and Air Conditioning Shop.

Anthony J. Messineo, Air Cond. Equip. Mech., Leader, Maintenance & Construction Branch, Division of Operations - Outstanding work performance in the Refrigeration and Air Condition Shop.

Kenneth D. Murrell, Supv. Microbiologist, Helminthic Diseases Lab., R.L., Animal Parasitology Institute - For leadership in establishing the nature of the protective immune response of swine to trichinellosis.

Marjorie B. Nichols, Biological Lab. Technician, Protozoan Diseases Lab., Animal Parasitology Institute - For her outstanding technical assistance in the study of avian immunity to coccidiosis.

Lowell D. Owens, Plant Physiologist, Tissue Culture & Molecular Biology Lab., Plant Physiology Institute
For outstanding service as Acting Research Leader of the Tissue Culture and Molecular Biology Laboratory, PPHI, for most of the period from June 1983 to the present.

Robert W. Reise, Biological Lab. Technician, Nematology Lab., Plant Protection Institute - Conducting independent research while maintaining superior performance in assigned job. This includes development of new techniques for rearing plant parasitic nematodes that resulted in journal publication.

Michael D. Ruff, Supervisory, Microbiologist, Protozoan Diseases, R.L., Animal Parasitology Institute - For leadership in establishing cooperative research with industry on coccidiosis and in developing treatment for coccidiosis in minor species (game birds).

Sylvia B. Stephens, Secretary, Research Unit, U.S. National Arboretum - For excellence in the initial organization and subsequent efficient operation of secretarial support services.

Shirley A. Weese, Secretary, Vitamin & Mineral Nutrition Lab., Beltsville Human Nutrition Research Center - In recognition of exemplary service by willingly accepting additional duties thereby maintaining office productivity during a clerical vacancy.

David L. Wood, Chemist, Milk Secretion & Mastitis Lab., Animal Science Institute - Exceptional performance in analyzing lipids in cow and human milk and in analyzing lipids of teat canal keratin in cows.

Larry T. Young, Biologist Lab. Tech., Animal Parasitology Institute - In processing specimens, increased productivity of the unit.

Quality Increase

Janet M. Bartholow, Secretary-typing, Fruit Lab., Horticultural Science Institute - For effectively providing exceptional secretarial and administrative support in the research mission of the Fruit Laboratory.

Thomas B. Jacobs, Jr., Biological Laboratory Technician, Ruminant Nutrition Lab., Animal Science Institute - For exceptional performance and dedication to our research effort involving intensive animal experimentation and analytical procedures.

Epilogue

If you aren't fired with enthusiasm, you'll be fired with enthusiasm. Vince Lombardi.

Waldemar Klassen

